**Notebook Series -- Pocket Notebooks**
**Notebook, PN-16-02-15**

The one dated entry in this pocket notebook is from February 1917. The book was used by Edison, probably during the period February-April 1917, for notes pertaining primarily to war-related experiments. Included are entries relating to smokescreens that might enable Allied ships to conceal themselves from enemy submarines, as well as other camouflaging devices. Also included are experiments on sound detection devices and other means of locating submarines. There are also references to Edison's work on a "hydrogen detector" that would indicate the presence of dangerous gas in submarines. In addition, there are comments on torpedoes and other armaments, range finders, and the use of mirrors to blind machine gun operators. There are some notes on disc record production and on continuing efforts to cut down on the number of defects in the records. A few entries appear to be transcriptions of entries from PN-16-11-15.2. Among the employees who assisted Edison in his wartime research were Absalom M. Kennedy, William H. Knierim, and Benjamin Liebowitz. Employees mentioned in connection with disc records include William W. Dinwiddie and George Werner. The flyleaf is inscribed "Started Feby 15." The pages are unnumbered. Approximately 150 pages have been used.

PN-(16)-02-15

E-1697

#2996

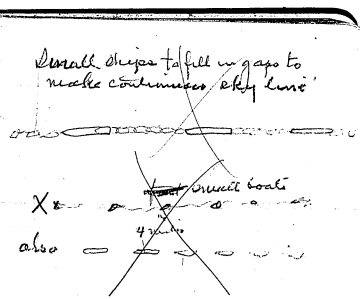
Started Feb 15

Submarines

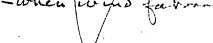
Important

[1]

Small ships to fill up gaps to make continuous sky line




X 3 or 4 miles further away form a simple screen no sky line – when wind favourable



Evening

Ships partly dark –

it would be impossible to see, our ships even at short range

Torpedo —
4 parts Warhead airflask after body + tail —
Airflask length 144" Weight 1019 Lbs
air pressure 2750 per sq inch
Cubic Cap 23.85 Cu ft
also Contains 32 pints alcohol + 53 pints water or 10 pints lubricating oil

Over all length torpedo 23 ft inch.
21" dia — 82 Horsepower 29 Knots
Lateral 12.000 yard torpedo

Air is heated in the closed in a Combustion chamber with alcohol vapor and at the same time generating steam + lowering the temperature according the amount of gas.

Warhead contains 220 lbs wet gun cotton

I try a smoke screen (wheels) which absorb all light but a special ray from protected are beams. We can see Enemy + fire by it. They cant see us — Could have it go from own ship

Each ship lets out at stern a smoke screen if wind is favorable so Enemy cant work ranges further

~~Shoot up vertically by Compressed air a Camera + Parachute device for revolving Camera to get information. Could cover 500 ft long~~

Projectile to fire 15 miles
drop Cambridge Calcium phosphide
Carbon Muffler

Spectroscopic equipment

Bombs from flag ship mighter up in air mile high open + displays numbers or dots + dashes by sound

Smoke ball for direction of wind at top of cross of ball ?

Draw our own smoke away from Enemy so can see them from 25 miles away from the guns or duck at us -

Toward nets forming a corral for fleet at night,
Red lip days.

project submarine beam of Shoulem light etc below to see Subs through Long Lines

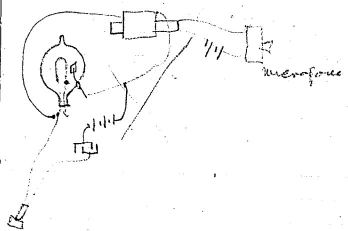
How deep down can a 16 CP + 500 most powerful Nitrogen filled lamp several hundred CP be seen by off lightships, also see Sub M

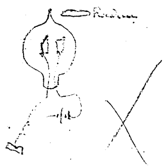
Anchored Neptune 25 miles out system with Shoals Connecticut

At night, have gun + range finder ready shoot 3 mg rockets one after the other to give time to get range + if see anyto hup. force do this all around horizon - for Subm. also -

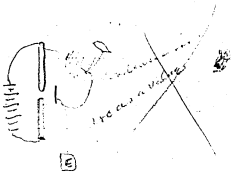
Arrange light protection at Eye piece of range finder or goggles for man so if he takes goggles off only the light from range finder strikes his Eye also Extend 3 ft to diminish unnecessary skyline light

In Black board at distance with object moving over with dif ~~[illegible]~~ depths of shade, ~~test~~ open Eye men against goggle men also both when looking thru long tubes to Cut off unnecessary areas.




~~Speak to Meadoft about getting Kampfert or Martin to write about Edison Valve~~




E2 has 270 000 lbs steel

With 100 ft mast can see horizon 17.14 miles – of 87 ft mast can see 21.34 miles – less haze, [illegible] angle to see Eiffel

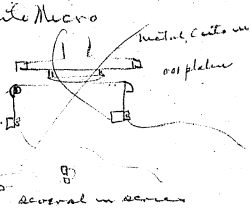
Aeroplane propeller, wings 1 3/4 cords 22" long holds up 850 lbs (12" gun) propelled at vel of 250 ft sec

Sliding Tube Resonator, for clang pendulums of pendulum clocks

Diesel – Metals reduced by hydrogen
Hammered in H or N to ingots
Do plating Whole of Cylinder
on plastic or wax tools, propellers
+ taken out frequently & polished
Lay out small single or 2 cy + see of
can plates

Diesel, all hammered charcoal
iron, big pistons, (a) springs compound
to demolish obstacles.
As crushing safety stops every
Engine position & Crank – have
Cushioned bearing [illegible] air
or glycerine or bath

Absolute Micro



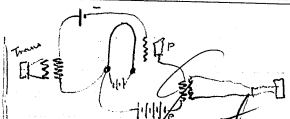
Eagle Rock telephone 853

Lieut Clarke Ordnance
" McWhorter Submarines

Bentons Ordinary Gunpowder contains
allumina To consume all gas residue.

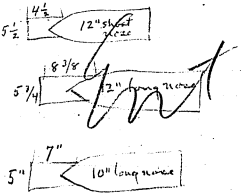
Run Chalk charge with a
One round round vector,

Pressure on 14" gun 17 tons
to inch sound gun 26 "
pressure at muzzle 7 tons




This is correct, from Mathes,

Wind Res of 14" shell 2400' sec
3030 lbs this reduces shell 70 ft
per sec

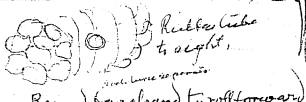


For absorbing Explosives per Quart use Meagle for CO, Nitrous, & Nitrated Bengal System, Meagle & Pierce unexploded.

Dr Chas S Hastings 248 Bradley St New Haven Expert Tensile Malleability, Brass Tensile Expert.

Confetti Castor & Rice PS unexploded Scatter Confetti & spray & round Mist, Tar

* jacks with sharp points Scatter on sectional, we have 1/32 Crucible steel on our shoes.

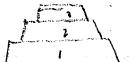



Round bag of sand to roll forward men on belly

Chapinell wheel divided in sections 12 smaller defensive large pieces –

If Muddy roads, devise trimming mixer which adds water + Cement + mixes advancing all the time trucks supply Cement, do 1/2 the road. 24 hours will act – 1 ft thick

Devise road making outfit width for heavy substitutes Train of locomotive one of adjoining the other 4 trucks supplying stones sand + Cement, go anywhere over fields etc for Bridges. Knock down sections



also Shapenell Spike & Cut anvil Cutter

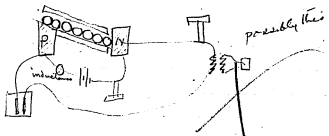
Net system for sick man work out a bound which travels along net till it reaches Ship & Explodes on Contact,

Roll of Broadmouth 15° about in Hurricane sometimes 20°
Roll for complete cycle 14 to 15 seconds

A A Pfund of John Hopkins Col Pitts, regarding Ultra Violet Rays –

Machine gun operations throw Sand in Engine
Mind of Mechanic

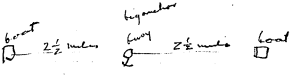
Perhaps our missed 14" projectile should have a small leak taken made active just before use if missed water goes in & it throws up a big lot of water




Carbon balls when wave from phone Come increase or decrease Rio & thus cause big battery to be added – great variety Experiments possible Cup balls with silver etc like Tacfumind – Pb + Sb + a silver bold between each pair – action of waves makes thermo + control local balls

Reports:

1 Explosion hydrophone
2 Vision & counterfoil
3 Smudging periscope
4 Turbo head propeller
5 Strategy of smudge behind firing line
6 Sound range finder
7 Smudge bottles in salt sea water
8 Convention Self-recovering guns
9 Asking in 22 small boats against U-boat detection




pull on net at buoy near boat, micro-electrical, boats immediately stand wrapping net around. This idea can be made automatic or several nets controlled at a distance —

If Sub is charging on top at night & a boat 5 or 6 miles away can use sound range finder get her position a fire, slighted deviation of the shape of the vast number of sound waves recorded will give a base line to get distance — Can do this using bottle with dreadnaught & continuous firing when can't see them.

Scared wireless no code

Use 4 wave lengths send
10 words power predetermined
Change again to weather
4 20 on 1 Coded use
a machine 4 send 1 word
Each wave length.

Cancel out local sound of
a boat so distinct
signals only come near
mine

Waves entering equally towards
mine of equal strength but
opposed on each side of
disc but X is out balance
being unsymmetrical.

X

In our disc put piece paper on front
to scrape along tops of bridge
walls to make more scratch
see if it varies up that scratch

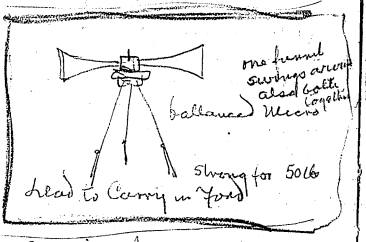
Why not set Jenny 1918 last day
will take back old technique
records for data to -

Put Cut out also Physical telephone
when technique [illegible]

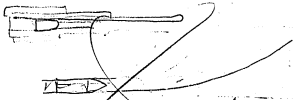
Make pad thus

Can be got hollow by placing bars etc then dissolve out —

Use wire + cut of so length as same as diameter + square




Range finder + spotter on Narragansett highlands telefon Connection for Sandy Hook demo —



propeller on a ski

Ask Mathematics What lengths the gas gets from the alcohol in car in torpedo + also liquor or other things besides alcohol — ditto than Compressed air —

long tube resonator 3 ~~sec~~ 150 ft long ask mathematics —



+ arrangement to vary length

Ask Pupin man if tuning is exact + sharp on wireless

Ask Pupin man if phone
should not have high
Resistance

Halger Cabel Co
make up to 2000
ohm Bell Receivers

Ask Pupin man to
give Diagram how to
Rig up sets with
wireless 6 to 10 miles

Arizona 100 phones
20 cks max phones on
1 ckt 10

#

Pfund, John Hopkins Bulletin

No screen known that lets only ultra
Violet through but can be imitated
weakened by combination of 2
or more screens

= Nothing better for U Violet than
are between 2 iron rods
Hg Vapor very good

Following are fairly transparent
to U V rays

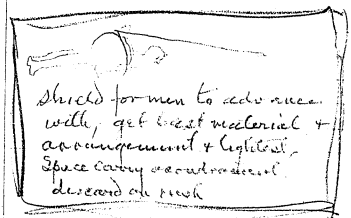
1st Dense Cobalt blue glass one
of whose sides is coated
with Gelatin impregnated with
Nitroxodimethylaniline

2nd Plate of potashed quartz
heavily silvered, silver is
almost entirely transparent to
wave length 3100 A U

3rd A Polished Crystal of Nickel Ammonium Sulphate

4th A Quartz bulb filled with Bromine Vapor

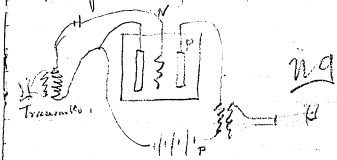
5th Larger of Solution of Nickel Ammonium Sulphate or $CoSO_4$



Shield for men to adjust screw with, get least material + arrangement + lightness. Space carry ammunition discard on rack

Spot Machine guns by sound finder, draw fire by Dummy -

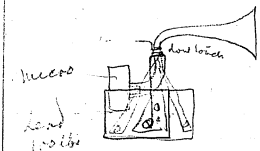
Amplifier using Aluminum Rectifier -



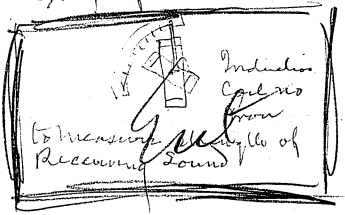

Change electrodes allowing to get it

Second 2 gun with water penetrating rays, worked like Maxim works, Machine gun high Vel by bigger chamber + perhaps 1 gun big enough - this for killing aeroplanes

Want instrument to determine Shell in relation to enemy aircraft




To swing around to measure in box the difference




fire 20000 yards Mg bombs – Then if found faraway or close

have bombs dif ranges – out of up

tall fire so the area is such they can't see us but we see them & so continue we can work

~~recoils funded of fire –~~

~~Buy Lot rockets.~~

ascertain if showed fire low or very high – get one for 1" gun go up & make with muffler or silencer

see how far these Mg Rockets will give a photo –

Try funnel in tank
only after midnight

Turn plate of brass
& polish very smooth
Buff then Varnish
Reg. Van Bake & ground
on diferent moulds

Nickel on with platenole
metals, use hard de-greasing
& plate then let up in cocoa
hours in Reg, then use
celluloid file –

Can differentiate between a
steamer & a sub M submerged by
slowness of propeller.

Get smudge out that
cannot be blown off
or washed off by gas alone

Stop bird one receives
cattle tallies –

Lieb. man about useless
after funnel in water

Riley's man mailed to 11,815,000
said over million dollars of pahoman

Bore out cores to feed in powder for underwater light - feeds cover -

& Ott try asphalt in other oils wool in gasolene or water also set up to see how wet in time also support gasoline on talco so does Compressed air -

Put the College Electrical man on Cored Carbon & ferdinand in Chemicals & metals -

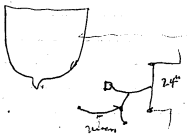
Ask Mesdames of Chemical Circuits [illegible] as [illegible]

Buchanan Come over & see swimming 2nd request

good range for Torpedo work is 500 yards or less but gunners [illegible] are skilled enough to strike a target at 5000 yards

Get right wireless set for 2 fords

See Lieut Clarke when he comes over about the patent on [illegible] 14" [illegible]

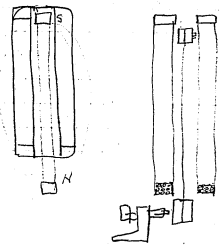



like Fessenden but Calemay amplifier

5 to 7 waves from the 2 screws
(12) 2 screws given 5 to 7 waves
second — 8 Reeds actuated
by microphone waves, all tuned
from 5 to 7 waves - limited
amplitude, strike a Carbon point
+ Bell -

from Sandy Hook clock to
Atlantic Highlands R.R.
clock 3.6 miles to
to Orchard shoal light 5 miles
from Manasquan Light to
Scotland Light 5 miles.
Coney island light to
Swinburne island 2.3 miles
Coney island long pier to
Swinburne island 4 miles

find out name of metal which
has no expansion by heat was
for diaphram next to Carbon
button —




The 5@7 Persec reed with its own
field + coil in Microfone ckt.

Time with precipellon 4½ mile
sec6 - 12 Reeds tuned in increments
of ½ between 5+7 + another
back for 8@10 miles now full
effect -

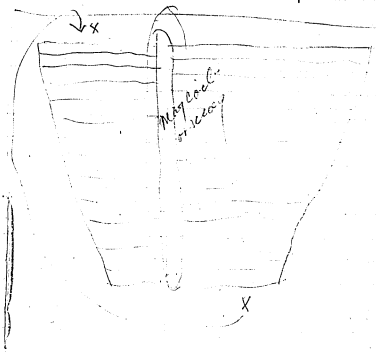
~~Ask Bond [illegible] the Lighthouse Dept over at Lighthouse Dept. headquarters of the~~

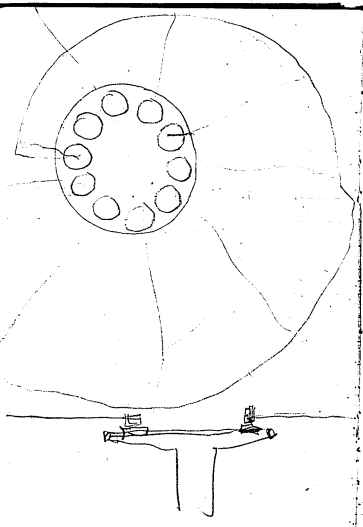
Ask Bond to find out if the Ambrose & Scotland Light Ships could accommodate 2 of my men for 2 or 3 days for experiments — I have permission to make experiments but want to know if can sleep & eat there

Insmudgeing sky line to make our ships invisible have rolls of cloth very black matter & cover over smoke pipe or bottle.

Length of 2 second Pendulum 39.12

Pendulum making 1 complete V.6 per sec over & back 9.78 inches
3 per sec 1.087 "
2.75 per sec 1.29 "
3.25 1.92 "





with brake wheel shunt it
with adjustable shunt to.
Control strength

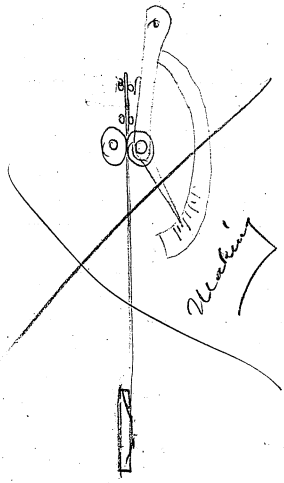
Soak the Disc blank mix
with Varnish then squeeze
Excess Varnish out &
make blanks shown
by no spring back &
scratch dust to fibre
Soak fibre alone —

Ask Lighthouse
heads opinion of both
Submarine & coll and
lights ships have
wireless —

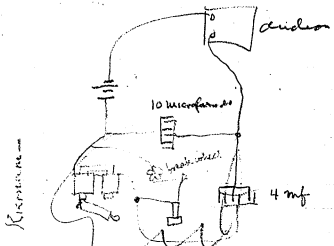
also if they had 4 bells
diff strengths might
locate position ship

on Merchant ships on
air-gun throw black smoke
1/2 mile each way,
towards submarine

Werner take a 12" fan
Run at 800 Rev Min - 3 blades
Record on Sonalah Machine
+ Run phono very slow
so the long vibrations
from it would shorten so we
can see them — phono must
run 40 Rev to get 1/8"
waves,
If Cant run that slow rig up
worm & make it run as low
as 5 Rev min - Edison X




When see sub fire smoke
balls at her all around
so she Cant see
hard to miss -
Walter Sparks




Resonance, $2\frac{1}{2}$ per sec up to 100

Aeroplane 100 miles hour
make at least 1500
Rev per minute –
use 6 8 + 12 cylinder
– 8 is double 4 + 12 is double 6
12 – 300 sec – 8 200 sec 6 50 sec
Diameter screw propeller
over largest submarine
Total Dia 55"
Pitch 45 3 blades

Range finders obey on light

find out if Aeroplane Engines
Say 8 cylinders is explosions
such as they fall on
Continuance sequence or are they
slightly irregular –

Where for determining speed of
Enemy ships continually
so Computer for torpedo ahead
all time

Reduce $Fe_2O_3$ by $H_2$, then pass Nitrogen
to combine with the $Fe$ oxide
to form Ammonia –
Yes is probable I may see
that myself Fifty years ago

Wrote to Field of Industrial & Engineering Chemistry about Telephone Experiment

Chester. put up plain Audion acc. of Current Thru Valve as Rectifier or a Monitor, or Diodic, put dial in Plate Ckt & bring magnet near of Elec Mag & open & close ckt




Connections for 2 Audions

A 10@12 Volts

B 130 Volts -

Good

1 = Boring Internal sectional Compressor for trench work

2 = Using very low or high induction for communication instead of telefone –

3 Using very high note emitted from heavy gong with mica in induction or from having tuned reed instead to listen to

4 Heliograph –

5 Detector for hearing Mines & Safety for improvement of artillery & rapid sounding by [illegible]

6 Hammering circuits of trench sounding board & trench – deep drum for telephony & with large piano sounding board & finger tapping by spaceware wires of Heliograph [illegible]

7 Mud shoes

8 boat & life belt for wind moving artillery

9 powder packs

10 Machine guns (improved) from a distance affecting [illegible] of opposing [illegible] or [illegible] with [illegible] & [illegible] for [illegible]

11 Confetti

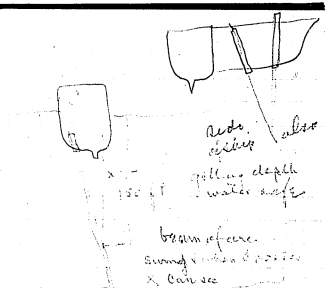
12 150 ft Ladder Extension periscope & [illegible] Mine work bullet proof shield

13 Receiver – Earth gun using [illegible] Echo, knows distance [illegible]

14 Black smoke proof [illegible] shells 2" gun fired at [illegible] when [illegible] also smoke bombs [illegible] from ship also feed gas to funnels + [illegible] 12 ft from [illegible] to [illegible] ship + ahead + [illegible]

15 Ask Daniels if [illegible] accurate device for finding aeroplane [illegible] speed –

It looks as if over [illegible] with broad wheel is slow vibration of [illegible] grid plate or [illegible] giving a slow [illegible] to [illegible] these giving AC long slow waves below hearing [illegible] Thus is due to giving of [illegible] or to static attraction at period of vibration of the [illegible] = Anchored [illegible] or [illegible] vibrate is one [illegible] & [illegible] on [illegible] & [illegible] to stop for [illegible] weather –




Clarke - Lace Alg & Aug
Naval Institute p 1308 M Vol
3010 Yards $20

How does position finder work
Submarine in sea bay could
get out again without rising

Turning Record
435 V Gradd ~~ft~~ Second

In sea blue can see clearly 150 ft down
bright day - cloud day 50 ft down
Vessel above, on cloudy day can
see clearly 50 to 60 ft -

Wanted device or instrument
to locate ~~with~~ Vessel
without rising

Euphos glass spectacles
to absorb Ultra V + violet part
of the blue - both sea & vapor

Acetylene Calcium phosphide
with Contracted beam light
to make Maximum ~~[illegible]~~
Lampblack to be thrown
by air gun Catch fire on
[illegible] +

(5U)

get best Broaded Record
Worse second scratch
get the rate —

Rough Equipment show scratch worse
one start of disc 280 to 500 sec
will try a Trocked record + get rid
the Vibration on Cylinder — also try Cylinder 40
Knife 80 Rev

Keep watch on wood pulp for
Discs —

Maxwell Keep about
gramophone Recs
records 1 yr or 2
against Machinery
defects,

Kneerim + Laibowitz fag out
especially Cylt. Cylds
primary + 2nd by for
input + output, 7 sec
accessories
Microphone 2500 to
5000 ohms —

White Milan Turnip
Oval ng —

Cabbage — large to fairly
round.

Rape Dwarf Essex
1/16 only fairly round

Poppy — 1/32 poor —

Celosia 1/32 oval
ng

Black Mustard
1/16 oval mg

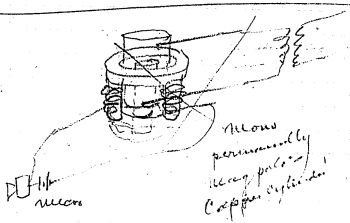
White Clover 1/32 oval
mg -

B

A

Cant distance be determined for
A better by using B,
Why not use a Rochon prism for
determining sweet angles better
in Range finders

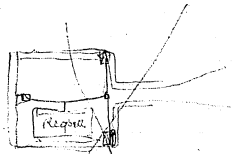
Crystal Telegraph X is hard characteristic with fold. Sound waves vary electrostatic Capacity -




If amplifier can put
desired in service

Tuesday, try 2 then 3 bells
tandem unlocked at 8/4-10 as now
32 holes 3 bells Lighted

Fire needs quick shown
need work




Good head for Bell for Sandy
Hook

Storage battery built Lake & Condenser
003 = 1.08 [illegible] power [illegible]
[illegible] for [illegible]

Fire bought lights 4@6" gun 10 miles
silencers, range finder & other,

Find out ~~for~~ Hotch manual
of Pettibone [illegible] & [illegible]

Get Head Cut Out for phone on
ships new systems –

Brought up Enemy
Wireless but not ours

Send photo [illegible] 1/2 [illegible]
for plans to Govt

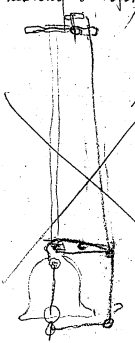
Report Revenue shows on
displacement + power to
speed of 30 [illegible] plates & Groups

Telefon + [illegible] money get [illegible]
order in bottle, [illegible] of [illegible] [illegible]
spatter on [illegible] to station below
water line, or [illegible] way [illegible]
Cant be destroyed –
Jan 7 1899 p 90. Naval Tactics

Look Chester go up to
Cragin & like & see if you
and if so get Strong &
take up his [illegible] &
test –

get up system of Jimmy
Parker + Saunders Keep
Its to use the
view of going to Commissioner
dello [illegible] or [illegible]
with the [illegible] –

Make a striking [illegible]
for testing under water

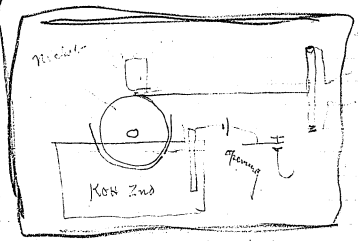


Sandy Hooks

Made

perhaps some of the
noise is wisdom +
due to battery – take a
Current put up battery
see if it disconnects [illegible]
Condenser around it

Also about von Ende




Rotate [illegible] Ends disk

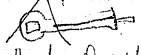
Chalk Cylinder only
use 3% KOH old book
but says 20% KOH test

Sr Cylinder used 1/16 wide Pt Cylinder
also 3/8 magnesium Cylinder
1/16 slower negative Res in line
but really sound heavens
Current or thus grey [illegible]
where large [illegible]
point should be smooth as possible

Sr Carb 200 at water only
is 1/2 load to [illegible] KOH

Fred Bell – [illegible]
Water to mix $SrCl_2$
Thinks [illegible] determine the porosity –

See the pens are made like old pens



Use thicker Diaphragm

Dry Carb Lithia —

2 min cy 40 knufa 80 Rev bracket leak
about 22 waves at 80 on cylinder
Area Mers 95/1000 —
this makes 2136 waves second
Think goes as low as 1000 —
by 1800 would take meat.

| | A | B | |
|---|---|---|---|
| 150 | 3' 8.25" | 7' | 4.5" |
| 200 | 2' 9 | 5' | 6" |
| 250 | 2' 2.4" | 4' | 4.8" |
| 300 | 1' 10 | 3' | 8" |
| 350 | 1' 6.84 | 3' | 1.68 |
| 400 | 1' 4.5" | 2' | 9" |
| 450 | 1' 2.66 | 2' | 5.32 |
| 500 | 1 1.2 | 2' | 2.4 |
| 550 | 1 0 | 2' | 0 |
| 600 | 11" | 1" | 10 |

Get some sulfite pulp dry
Muscle Recando — 4 3 1
3 4 1 2 5 1

Hurry Completion of $SO_2$ Absorber for Splash when oil was meant,

Get Visual Tests from important parts work ahead to Central point,

Signalling system for
trench fighting when
telephone telephones were
destroyed Mirror
Visual Concussive Weapon
Iron Entrth with Hammer
+ large area board
Signal rockets,
High note hand pump air
system + siren sounds with
fork Complete rules book

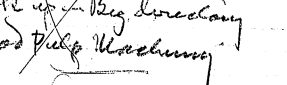
Detailed Ranges funder to show
position of enemy guns
Quick -

027 balls of Mercfour weigh
10 of them 1·3 mulgrain average 1·4
10 " 1·5 " for 10 balls

less than a 1/14th of an ounce each ball

Look up - Big dredging
~~Wood Pulp Washing~~

Milner



Use Thumet Graphm highly polished
of lines or wrong
6 discs -

subscriber

fire bombs launched
Incendiary

(65)

Mn $O_2$ OH dont apparently dont oxidize Hg in Alkali at 450 Fahr
But perhaps $CO_2$ OH might
Try it
Perhaps a little shellac or Lampblack would cause it to act, perhaps Hg should be left out

Use discs with very thin shellac & smoky gas Lampblack (Smith) soer & very removm Excess, also balls same way —

Try 32 hole, only 3 balls we spoke —

Try Bell as Trommmler where Mercury & beads bounce out, also Thimes Bell Bragham —

Ref Movement of a 3 inch alternator Sees Rev surgical Valves a Aluminum rectifier or Hg Vac tube would work as the amplifier —

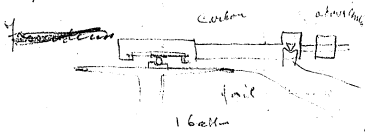
Call attention to research Dept Head & Mount Scan Records for several months get them —

Ask for temperature Curves on Lead Cells —

Buchman — How soon before you can start separately & Renting Cells —

Test cells with Cobalt using Hg —

1/2 dia disc 201-air space 003.




Terrestrial Oscillation, observed
5 times heard Oscillation
Reed coils by microphone Oscillate
Letter sounded clearer
than microphone –
Letter not sensitive as not built
for sensitive work
Terrestrial Telephones work
his Oscillator succeeds
for 1/2 mile only

Walk of submarine perfectly
apparent in all but heaviest sea
when submarine 40 ft down
Even when storm raging dead off
or in line with the wind
Water tunnel

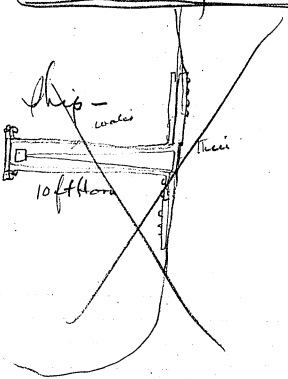
Oil globules continually come up

Sub M seen 150 ft deep at Gibraltar
by aeroplane, aeroplane only
300 ft high can see big black
bulk of Sub M as proposed at
Pensacola

One man says high swing of the
Communicator off subs can be
heard 15 miles in Extreme
Cases, usually more 4
miles.

150 lbs TNT gives at 110 ft
260 lbs pressure per sq. in.
on a Submarine substance
stand 150 lbs per sq. inch

Small Torpedo 5' Long 6" dia
Speed 30 knots, range 3 to 4000
yards 15 lbs TNT working
fixed depth 5 to 15 ft, internally
Lift Expelling Gas Depth
Swivel gun held at shoulder
Secret Now being developed




To make splash range finder a
success must be able at a
distance of 100 ft to see 2
black lines .031 inches apart
Angle 5.3 sec also try several
men on 1020 apart
good way to test Eyes & telescope

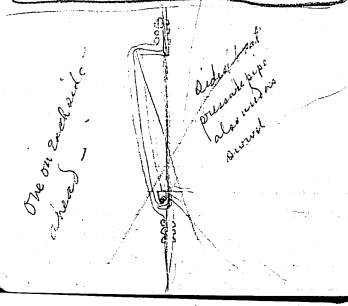
Smith – Borrow of Hallands
Shot gun lake coat
Shot & [illegible]

Bary Couple small music
boxes for Water tests –
Crystal lake, a Tank put music
box in small box also Magneto phone
strumal & flowers music
Box box by string at other
end see if get it

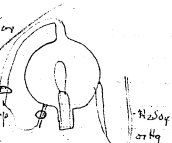
Ask Ward if he has an outline of the new Ship Off Chart

Phone in Cayuga Lake - Knock on Rock at [illegible] see if got it
If so go to Rudonny & pull them along

Perhaps Holland is gathering
What gun opened them
grounded - My pads under
Saw Hoop




Hydrogen Detector




also 2 bulbs connected
others are changes
both affecting pressure
Reading def of heat

Platinum wire with glass block -
see lowest Temp -
or fine cylinder Ag0 dropped over wire Etc

Miller to put aside in Harry's room 12
Rosin records, old Lamplighter Vers & 12
new Chino Varnish - ditto & Duplicate
in his room - Number them in book &
put strong Tarp on -
Duplicate with Reg Shellac Hook
with Reg Vers & Chino Varnish -

Ask Clarke or other ordnance
officer about 3" gun 1 inch 6'9"
rod for perforating internally loaded
TNT - pounded for Week III
Ask Clarke if he thinks Conemaugh reels gives in R. Finder

Device Torpedo steered
by Sound waves
through Water, Franklin

Ask lighthouse Man

1st If buoy having an anchor would lifting it from bottom sink buoy —

2nd Why is ⚲ × used

3rd Sup largest buoy

4 Whistling buoy

5 Anchor Carried away often

6. Which quantities not anchor well hold a buoy of given size

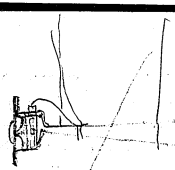
7 What size rope used
how long last do they
have breaks?

Do buoys go upside down
angle to anchor is
chain or rope used

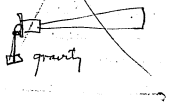
Resistance due to independence
square of the turns magnetic
ckt being the equation

1 Turns — 1 ohm Ohm Resistance
10 " 10 " 100 "
etc on

The kind of coil
inefficient as it takes
lot current to build
up lines for more
efficient —
Best to have largest
cross section of iron + silicon
iron + smallest circle
possible to get at
wire on take very
little current to throw
out the lines —



Rubber sealed piston to compensate the on Dolphin for water pressure




Try over 15" focus telescope on those || lines left viewing with only shade at big end. Make jerking head on this telescope to get better definition –

Suggest our periscopes be changed to definitely various distances apart + a design very different to make requiring special machinery

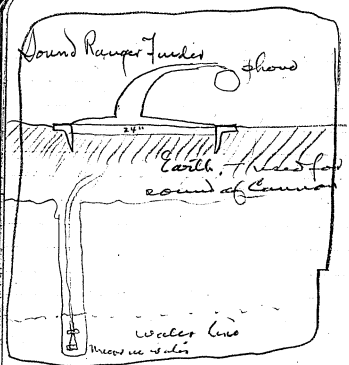
HMS Lion braces matted on top whose Splashroom — if your design in no way hampers spotter & wounded possibly is of value

Spotter being may require absolutely free use hands feet + eyes + EOEW gas masks supplied men in turrets. wounded inconvenience here we have dictus Considerably

Say I should submit it as it may be more effective than nothing now in use

Try pressed Respirator of lead on Victim at Jutland

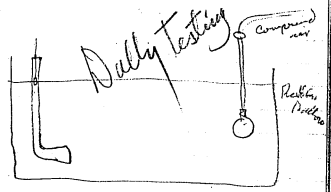
Have Medical Sup Tests on burn Cauterising Gallons with KOH.




The Earth water needs to Convey the sound -

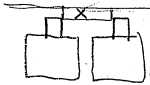
Put a Copper Mould on phone & Reproduce & see if turned part is smooth if not buff — work till smooth

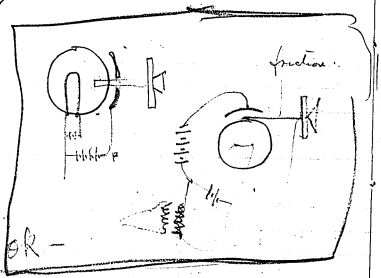
ditto Mould holder —




See if sudden inflation of Balloon gives wave motion to the float,

make X thicker 1/32 also to 1/16






Edward Eible – Bud D soup
who gv walter
Co I Armory Center St
Office Manager friend
Resin & Coxy plant
thirsty

W E Frederick, Bookkeeper
Musical phono Div with
Hartner – wife for Maxwell

Aerophone detector
Make sliding tube
Resonator 200 to
300 sec diaphram
Rather thick use funnel
& diaphragm to
amplifier

Sundge Rest
50 cc Each Straw oil
& Residue from distilling
Solvent Naphtha

200 — 33'
300 22

Vel of Sound 11 different

| | | |
|---|---|---|
| mean | 332.4 | Expanded determinations |
| 332 | 332.4 | Vel of Sound in air |
| 333 | 331.6 | Very different on |
| 331 | 332.4 | account effects of |
| 330 | 330.7 | |
| 332 | 330.7 | |

the wind + variation in Exact
Combination of dryness + temperature.

Average of above 1088 ft
second at 0. Centigrade –

Resonant Tube for 200 Vib sec
16.32 inches closed at
one end
for 300 Vib sec 10.88
inches –

If closed at both ends or open
must be twice as long
as above.

Measuring boxes on Audion
Ctls

| | | | | |
|---|---|---|---|---|
| 0 on Box | 100% of the current | | 44 | .8% |
| 2 " | 77 | | 46 | .65 |
| 4 " | 62.5 | | 48 | .52 |
| 6 " | 50 | | 50 | .41 |
| 8 | 41.5 | | 52 | .34 |
| 10 | 33 | | 54 | .27 |
| 12 | 27 | | 56 | .21 |
| 14 | 22 | | 58 | .16 |
| 16 | 17 | | 60 | .14 |
| 18 | 14 | | | |
| 20 | 11 | | | |
| 22 | 9 | | | |
| 24 | 7.5 | | | |
| 26 | 6 | | | |
| 28 | 4.75 | | | |
| 30 | 3.75 | | | |
| 32 | 2.9 | | | |
| 34 | 2.4 | | | |
| 36 | 1.9 | | | |
| 38 | 1.5 | | | |
| 40 | 1.25 | | | |
| 42 | 1% | | | |

714 times in series

Capt J.R. Robinson
Newport – Torpedos
Test

Spot on Eye front of
pistol to coincide with front

Signalling with 1000
watts Dietzgen fire corp
Come to Newport
want to talk
quicker about the
Res-or use shutters

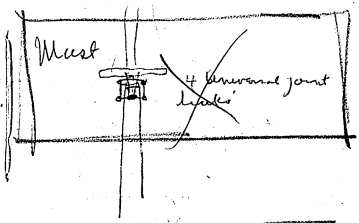
Prof Henry – Melvaten
try Very finely divided zinc sodium
peroxide nitrogen use very hot alcohol in
acid then dissolve the N from
porous + pores H again etc

Start Waller Miller Experiments
on tracking records to get
less scratch or softer scratch

Print a record with 1/4 inch
plate glass & see how smooth it
is — scraped flat to a
backing plate

Put a diaphram on both ends of the
sliding tube play piano + also
Violin into a Bell phone
the Bell phone with magnet on
1 end of tube acts if going
tobacco to other end

Meadcraft to write to the Elec
Papers wireless etc In many publication
I notice that a description of apparatus
Called the Fleming Valve I
permit me to state that this
Valve was discovered by Edison
+ Exhibited at the Phila Elec
Exp in —— & published
in all scientific literature
at the time where it was
known as the Edison
Effect. Fleming however
was the first to apply
the Edison Valve to
Wireless telegraphy -
~~He perfected it & brought it to~~
~~complete~~




Send two liquids both to be
placed in an Explosion
Shell the liquids on mixing
by Explosion impart a cloud
white or black that remains
long in atmosphere like
HCl & NH4

Try discs of sulfite
pulp board ~~spread~~
soak with Lake. Then
press, then Varnish

J Daniels,

I want to call your attention to the fact that Reginald A Fessenden an experimenter well known among the Wireless people has an instrument called an Oscillator which in my opinion could be applied to a torpedo whereby it could be steered after it left the boat and would be more practical than that devised by Hammond that it would be difficult for a submarine to escape its effect also that Fessenden has the most experience in Sub-M signalling & is the most valuable man the government could command in this

Put some of Chino Vanadium blanks in Coke & Cooking them then ground & try for Sodoli

Make 12 Double Crucible Chino Van – 1 set not broken between Coils, the other set broken

Resonate Mag when it gets the sudden solid high MP strain Resin must have changed the nature. Get on some coils MP & remove Mag & see what it looks like.

Find MP of Rep of Mag & of way above steam at 120 lbs pressure – Make records with lots of Res Mag as it will cover fibre accord

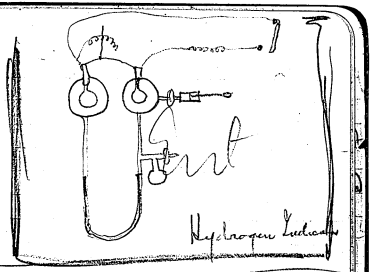
Determine to Consolidate the Copper of Moved – press on Lead at higher possible pressure 2500 @ 3000 lbs –

Resinate Mag MP 257 Fahr
Semi-crystal here but this was
the Mgo put into Melted Rosin
& good  Resinate lead softens 280°F

Try 1 flock
6 Chalk
2 Resinate lead

Resinate wanted softened 55@60
lbs — (10) 280° fahr  Cont. Chunked
runs at 337 which is 100 lbs
pressure
Well it dissolves in colloidal & not
settle out — perhaps powders
will do —

Try MP of Mg Resinate made
Reg today  ditto chalks




Nuuwdolic - You should try higher
density on Copper plating
also if necessary Extra altering
Crystals Much smaller —

Head off - see how far away
the Bell succeeds from being lost
in Chalk before — ditto Rell
Try with 2½ Marafuma in
Cut to stop Chalk Current
(91)

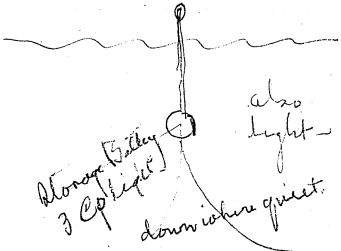
~~Method to try a Lantern Cell with Peroxide cap on top to keep air out –~~

Peroxide Co Mn or Fe + Cu decomposes KOH of Edison Cell with no time discharge the Cell –

Na Sulfite absorbs O –
Pyrogallic acid absorbs O
O absorption extraordinarily
Nasty no effect,

~~Phone Mr Hopkins if he can find out if with a heavy alloy of the submarine is down~~

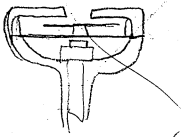
~~to the usual limit of the effect of waves is noticed –~~




~~Ask Kingsford about steel round wash~~

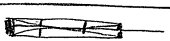
also if 4" pipe would be just right for Submarine periscope

Make plow
with steel comb THRU —



Large size say 2½"
Spring steel

Dismodder why such loss
artificial labels —



Rub M periscope

Try a Revolving Mirror
to act periscope like rudimentary
or Vibrating to widen periscope

Mirror along water line
just above eye — this
should make periscope
more visible cutting off
sea line —

Head overall Cons about
Kahn Garage office

Y Daniels

I have put finished a long line of experiments for detecting Submarines by the use of the Induction Balance & other ways of determining the presence of large masses of iron at a distance. None of the methods have any hope of success & I have dropped this line of Experimentation although it seems a favorite supposition of many inventive persons —

but I am continuing on more promising lines

Kneeman

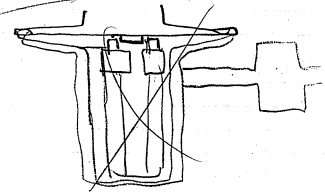
Cautiously worth putting to see pen on submarine —

perhaps pressure on a float beside vessel —

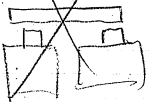
or a porthole near water line,

Perhaps underwater sea Cam are displacement waves by made disturbed sub m

Kinnum gives me the Curvature of the Earth 1/2 1 1 1/2 2 2 1/2 3 3 1/2 4 miles - want to know how high periscope would be to see a vessel at the water line -



Find some of the phonoplex phones or get them - also



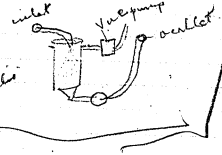
Mitchell - make up 2-hand lantern Calcium with Bismuth grain -

ditto 1/4 of Cobalt in 7/2

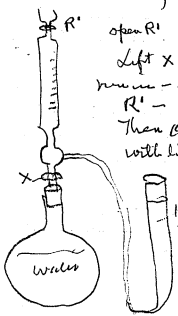
Hang up apparatus for Submarine buoy for distilling water, Impossible

ditto for obtaining water out of sea water!!

Incidentally buy clouded glass to take pressure of 300 ft -



Determining air or O in
sea water quickly




open R'
Lift X let mercury
run in – close
R' –
Then open X
with little inert air
add commercial –

Bring Hg in both to level &
read difference –

Hydrogen Indicator

Ag phosphate in dark at ord temp
slowly attacked by H, increases
greatly by heat at 100° C Ag nitrate
Ag sulfate at 100° C
Ag O at ord temp Cupric sulphate
at 250° C – Light does help

Hydrogen combines with
sulphur, yellow and liquid
at 215–350 – H S and decomposes
~~At the same time~~ at 310° C and
~~Does ox~~ oxygen ↑

Yellow Mercuric Ox is reduced
by H at 100 C

Mercurous Nitrate dilute
also reduced O

~~Try to put 2 circuits in series see how one affects the other~~

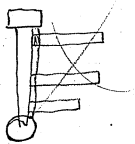
also in Circuit put inductance relucent with Condenser — see if Lowder

Try a Bell Microphone instead of Receiver

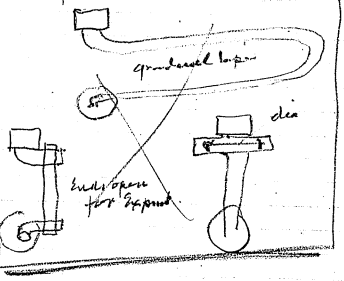
Try Kessler's — Chem & Eng Sulphuric Co. Sr Ba finely divided —

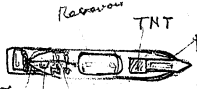
Nickel Oxide not hydroxide

Phone



Put lead weights on Center of dia
dittto Center of Thread
Put in double dia 003 space
String only on one





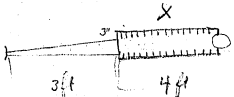

Torpedo to be fired from 5" gun

Gyro
Rubber Engine -

Very slow burning powder, runs 2 miles - torpedo goes 800 ft - Way use magnesium when no engine blow in water.

~~Ask Lorenzo what he makes and if frequencies patented~~

Put $\frac{1}{8}$ hole in End of Compensator on big Brass phone




drill hole in X 3 inches - partitions 1 inch high 1" apart

Put phone at a distance or Swivel around Map out Volume ~~also~~ by drawing Ear away

also 2 phones 4 ft apart but at same distance see if Can hear one with the other if so keep pointing from each apart - use trip or make a tripod -

Also one lined with $1\frac{1}{2}$ Cow hair -

also square box 4" Cleats $\frac{1}{8}$ deep $\frac{1}{8}$ apart $\frac{1}{8}$ wide fine tracks - 4 ft long or sawed in which to Bellow.

7/8 board
Cow hair on outside

Lesley Corn Trial Tube made for Reg Telescope —

Test Dimmoldus Keys 4½" telescope Comparatively —

Werner — Put forward authorities with sensitive recorder + see what our accounts you get,

See what Daddy done.

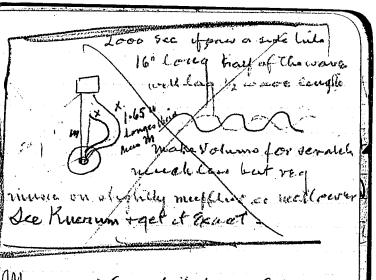
Fit up Big brass Phone for Sandy Hook

Put Kneeum on Second position

Decide what to do about Arc light in Dr Dennis least letter —

If Bungan funeral go on Mont

Mason see about prospectus — Range bank — Make prospectus Etc




Meadcroft — ship to J A Edison Fort Hancock Sandy Hook by Reg Goont Sent from NY 10 Bbls of Straw oil — get Soill Co + say urgent

Loebnitz — Know about Range Speed finder —

Better take off hood of 28" Tube & box up with Munger + End to go to Sandy hook — before sounding hood off get curve with Phone or music box use tuning note

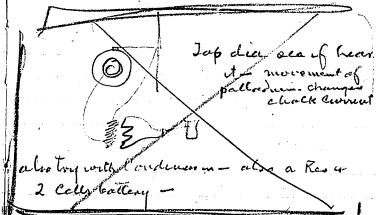
Ask Loebwoding if a Deb passes in a loop with a AC in it Could be detected —

Edward Rice jr young Navy - report Newport gives letter asking details for Mercedes boat for week, Mercedes in Norway

Fred Ott put Chalk phone in Hot closed place, opening so gets Suspended atmosph

MgO wet with water should work as it little Sol - perhaps try Carb Li or $LiO_2$

Find out where at my XYZ apparatus (I once made but never tried) stored




Lott, see maximum surface a certain minimum quantity of charcoal with ~~[illegible]~~ show a film, absorbing machine, bitter of fluorescent, This with idea sticking forever

Kennedy showed Sunday

3rd Bell 1500 yards receiver # 3

Bring Kennedy's book up to House

Town president –

See No Central, get permission to go on Highlands dock – and if possible move house if not possible build another on dock + get permission –

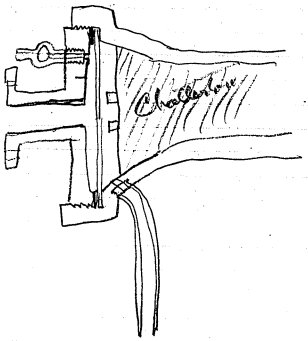
Also have Marshall Burgess go to Nassau see if can hire a boat with Cabin, with men to run it – or 2 cycles if he cant go

Let Mason go –

Figure out boat to tow Rig Bugs

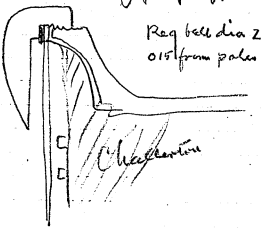
Bell without permission may battery in Circuit itself + suction armature

No3 Transmitter

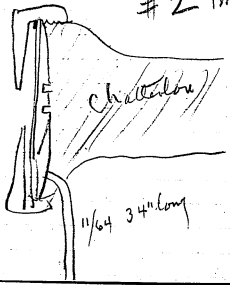


No 1 Transmitter

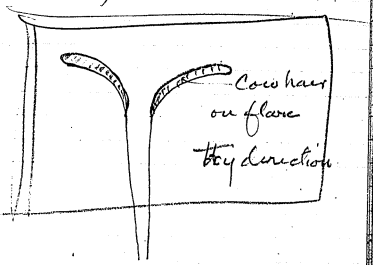
Req ball dia 2 1/16 on
015 from pales




# 2 Transmitter




Tell Kennedy he dont give
Numbers of dia in # 3, or 2
one hand 1/32 dia which I think
is No 3 ~~the~~ pity details
are not recorded.



Atlantic Highlands Branch

AM – Newark 606 827 930 1144

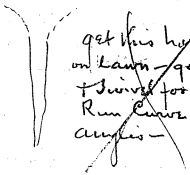
PM – 12.15 114 133 338 431 534 616

912

Return

AM. 625 658 728 844 849 1111

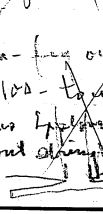
PM 201 413 420 509 734. 839 Sundays only



get this horn, put phone on lawn – get tripod – Swivel for horn + Run Curve at def angles –

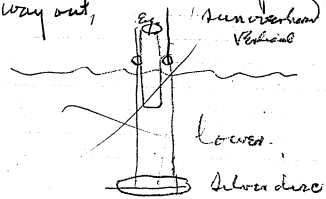
Lostbrook – [illegible] out [illegible] from 0 to 100 – to use bell

Receiver as [illegible] of sound to map out [illegible] –



When next Expert with Bell Mics, use a little induction in to cut off [illegible] due to jars.

To determine clearness of sea way out,




Send down to that [illegible] man who makes thin tubes & ask if he has any thin walled tubes 16 inch inside diam & how thin is thinnest wall –

4 oz

making up a funnel

See if Commandant of small shop at Highlands can about power, & met at Highlands on Wednesday or Thursday. Rivers easily navigated by our boat. This for headqrs & supplies,

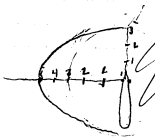
See if 2 anchors can't be used to hold boat from swinging —

Jenny see if can give a Red dia thals Quick by a reverse Current very quick.

With Mirror system ship can twist 14" in 62 ft length without disturbing Commander's seat, ordering a new telescope —

Tell Kennedy not to use lapa but use sheet gutta percha + then heat,

In heaviest typhoons in China sea no wave motion felt by Oldmann in 75 ft down below surface in Deep water & 100 ft in shallow waters —



Arzeshalor head

At Sawyers arrives

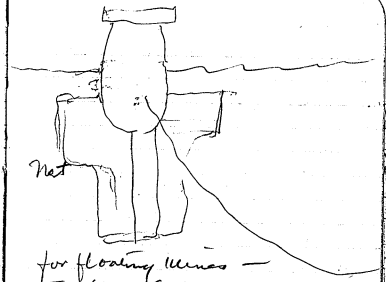
Change the Muzzle to Splash men to Shelf Sig 2 —

Talk over putting Concrete
3 inches thick around
Column w/ Schumacher
& private plant —
also sheet iron on
bottom piece of trusses
of roof —

Tremendous Oscillator Explosion for
Communicating to Barrage at
Barrage — Henry Eckstein

A M Kennedy
Care Charles Irwin
Red Bank N.J.
Phone 3 Red Bank

Buoy = Rubber Collapsible
Tubes Canvas with
air pressure battle to Each —
with grids — with for emergency on top
& block with flag




for floating mines —
stop effects Explosion

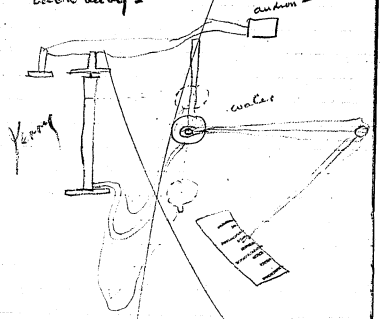
Get triple stage Vac Evap for co also
on buoy — or get by foreigns

See about stopping noise
of Engine as far as possible
= Muffler

Also — have mine stop, sounds
due to beat of waves —
& head piece in additional —

Ask how much pressure buoy will
stand — should stand 400 lbs
square inch

Mention in buoy report that it is likely The enemy may attempt to send out wireless signals to prevent our wireless on buoys from being effective. This can be obviated by using water sound signals which are simple and can be applied to Each buoy —




Tuners for Resonator
to pick out specific sounds
like Sub M & Aeroplanes
or French signals

In water resonator
1/10 of an inch per Vib per second
64 Vib 54" long
1080 sec 3" long

see Werner record
air sounds

to hear low notes on
Water Resonator
use a wire interpolated
in the listening tube —

1 = Subm. running submerged can detect vessel on surface running at average distance 1500 ft. Detected by Microphones, Oscillator receiving, or directly thru hull of boat

2 Noises quite readily detected in Trunks of halliers, appear to act like a Helmholtz Resonator

3 Vessels running on surface can detect other vessels running on surface at times up to 1500 ft but not so well as between a surface Vessel & one submerged

4 Submarine running submerged at 6 knots dont make sufficient noise to allow its detection at 600 ft even when position is known with any detector supplied to ships

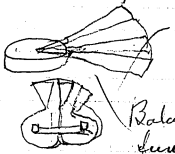
5 Mr Williams of Sub Marine Sig Co had special receiver lowered over side of vessel & tried to detect submerged Vessel without any result

See if break/wheel has been shipped to Kennedy if not when.

Talk Management about delay in purchasing Dept.

Hutch arrange Werner go to Newport go on sub submerge & record on phone several positions also running on surface

Dalby go down to Kennedy for turning wave space in Oscillator Resonator

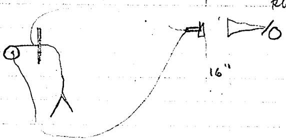


Balanced funnels

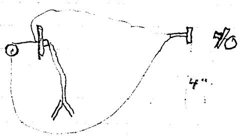
7

Look out [illegible] dont Tune
with the wave, when does
[illegible] air

Ford CCl Exps [illegible] $SrO_2$
Rhono




hear 16, a tune,




without funnel 4"

Used fork approx 290 Vib sec
tuned from Piano D note.

CC Measure
Air Column 10 7/8 long
Diameter 2 ½ inches.

| | | | |
|---|---|---|---|
| Adding | 5 cc | very little change | |
| additional | 5 cc | Reduced to | 75% |
| " | 5 | " | 55 |
| " | 5 | " | 30 |
| " | 5 | " | 20 |
| " | 5 | | 10 |
| " | 5 | | 5 |
| " | 5 | | 3 |
| " | 5 | | 0 |

10cc is 1/8 inch in CC column
in tune,
Hence 1/8 of inch above or below
the 10.7/8 Column will not
throw it out of tune 20%
½" Kills it dead

Newport deflected Mag compass needle 900 ft.

~~Teleph Kennedy found that day smooth water outside Hook go out to 20 to 30 fathoms of bottom & try — friction too much in shallow water~~

Really rough test
Crystal lake waves from storm about
300 ft 65 sec = 18.8 mm per Mile

$5\frac{1}{2}$ Dia 10. deep

$2\frac{1}{2}$ " " C C Measures

$1\frac{3}{4}$ " " length Column

$1\frac{5}{16}$ $11\frac{1}{8}$ Responding to 290 Vibrations sec

If the big tube is closed with plate with 2" hole in Center then The Column is reduced to $5\frac{3}{2}$ @ $5\frac{3}{4}$ — instead of 10 @ $10\frac{1}{4}$ Open probably the octave — perhaps not but with 10" + Lap on get nothing

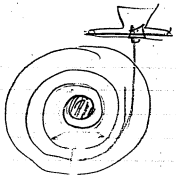
If this is OK — our tubes instead of 54" long only 27" is needed & tends to half to Dia or more

Sub M data -

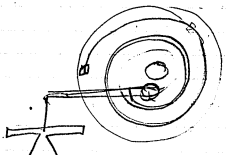
In running submerged usually use 2 motors
" " Rev shafts for various
Goals G4- 125 to 560 G1 2 & 3
152 to 400 E1 150 to 340 K boats
146 to 374
Foreign subs entering American waters
likely run very slowly
Main Driving Motors directly Connected
Commutator segments G4- 124 each
2 Coms to Motor Dia 17½ inches
G1-2-3 288 bars Dia 27½ inches
K1-2-5-6- 252 segments Dia 24"
Number of Poles G4- 6 each
G1-2-3- 8 (interpole) main
K1-2-5-6- 6 (interpole) main
Ventilation H (interpole)
Motors other than main driving are
running when submerged, some
continuous, some intermittent
Besides main Motors submerged
pumps main & adjusting, intermittent
organs Also Ventilators continuous
direct connected - Gyro Compass
Motor Generator, dynamotor, Voltage

Regulator AC rotor all continuous
direct connected -
Motor Generator for Fessenden
Oscillator, direct intermittent,
Steering gear Motor, continuous
or intermittent

There is a perceptible humming
noise when running submerged
from gyro Compass outfit
Adjusting pumps in Control
Central deck of K boats,
Pumps in pump room,
Main Motors Commutators in
Motor room -
Vibration is felt on touching
Hull with the fingers as a
slight tremor and periodic
Vibration at high speeds
No Knocks or jolts Except from
pumps - Sound of screws
Can be heard in after end of boat
also thru Fessenden
To obtain Complete Info Apply To Force Commander of Submarines



Slower than
Faster than 5th seconds per beat,



Pendulum 39.1 1 per sec
1 inch 6 per sec
Square of length –
Independent of weight in Bob –

Curvature of Earth

| | |
|---|---|
| 1/2 mile | .33 ft |
| 1 | 1.32 |
| 1.5 | 2.97 |
| 2 | 5.28 |
| 3 | 11.88 |
| 3.5 | 16.15 |
| 4 | 21.10 |

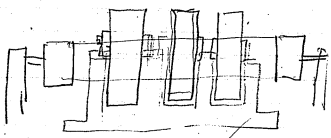
Speed surface waves Crystal data
4.615 ft Second –

| | | |
|---|---|---|
| 1 per sec | | 4.615 |
| 2 | " | 2.307 |
| 3 | " | 1.538 |
| 4 | " | 0.512 |

| | | |
|---|---|---|
| 1 waves 1 sec | – | 4.615 ft long |
| 1 " 2 | | 9.230 |
| 1 " 3 | | 13.845 |
| 1 " 4 | | 18.460 |
| 1 " 5 | | 23.075 |
| 1 " 6 | | 27.690 |

Affect solution

Wave Oscillator — slow wave



Which act like a Compass on a ship in Storms

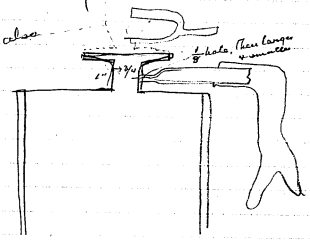
actual Center of gravity

Model

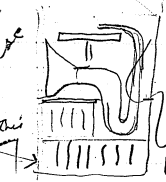
Current from undersea magnet works Coil & oscillates field

Each fly wheel has knife edge at various distances above Center

Jenny Test.




Disc




length 20" more

A possible to duplicate the scratch

Weight of air in resonant column which is equivalent of being connected to Diaphram —

| | |
|---|---|
| 37.5 | V.6 sec 8. grms |
| 75 | 4 |
| 150 | 2 |
| 300 | 1 |
| 600 | 0.500 " |
| 1200 | 0.250 " |
| 2400 | 0.125 " |

Based on 10" Column 2½ dia like

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Dr Ott - use from Drop in Vacuum (High) with pitch charcoal, Chemical ferr. [illegible] to help

Lectowitz Why cant an audion be made to vibrate sympathetically with Res + inductance so any note coming over telephone can be reinforced

Piano notes

| | | | |
|---|---|---|---|
| 32 | 96 | 144 | 240 |
| 64 | 106 2/3 | 160 | 256 |
| 72 | | 170 2/3 | 512 |
| 80 | 120 | 192 | 1024 |
| 85 1/3 | 128 | 213 1/3 | 2048 |

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Dimroth's note how bad + mottled with glass surface — Var sinks in — Try Varnishing Bake + then bring up to 300 degrees for a few minutes then it will soak in + make uneven disc then print + it should be even

Try some Chrome Vaes on steel plate surface dont go black

Try blanks with China
which Gear baked
300 gradually to
Condense for 1 hour
print —

Also 1st Varnish with
Rosin, bake then
China bake then
Print —

Look up 1 Rosin 1 flock
to Chalk —
+ dont give up
Expts — See drops
test — Thes
blank is OK I think
when any scratch
its due to Copper
Master or tracking
Try one with glass
or did I —

Elastically Resonance

| Vib sec | Column | |
|---|---|---|
| 1.18 | 128 inches | |
| 2.217 | 64 | |
| 4.435 | 32 | |
| 8.87 | 16 | |
| 17.75 | 8 | Low notes |
| 35.5 | 4 | by one system |
| 75 | 2 | |
| 150 | 1 | |

Resonant Column

| | | |
|---|---|---|
| 300 | 22" | |
| 600 | 11 | |
| 1200 | 5.5 | height Col |
| 2400 | 2.75 | by another system |

Best for listening in Open Top
is at water —
Closed both ends no difference
anywhere —

Transparent oil to smooth water to see submarine —
for landing, other oil —
for top while Corp's —

Tubing in stock —

| inside | outside | |
|---|---|---|
| $2\frac{1}{2}$ | $2\frac{13}{16}$ | 32" long |
| $2\frac{1}{2}$ | $2\frac{13}{16}$ | 24" " |
| $2\frac{1}{2}$ | $2\frac{13}{16}$ | $19\frac{1}{2}$ " |
| $2\frac{1}{2}$ | $2\frac{3}{4}$ | 23 lbs |
| $2\frac{1}{4}$ | $2\frac{3}{4}$ | 50 " |
| $1\frac{15}{16}$ | $2\frac{3}{16}$ | 1300 lbs |



Approximate Vibrations in submarine —

Submerged —

Screw 7 to 37 — foot or req speed P

Commutator 450 to 650 P slow speed
1000 to 1500 fast "

Gyroscope, high — P

fans & pumps 100 to 200 P

Displacement waves Non periodic
One wave in 2 to 5 seconds

Sectional Vibrations different parts of Hull & false deck

Gyroscope 7000 R.P.M. per Min

Beats given out by the 2 screws will be plain — Variation of speed around 3%

To make short fibre wood-
use Raw Deposit, treat in
digester with Sulfite +
then dry. This will separate
all the fibres - + it will
not ball up like Cotton
flocks yet be fine —

Make a Bell Telefone with soft
iron so can use battery
in circuit instead of
~~permanent magnet~~

Chalk telephone, try
KOH with various
oxides dissolved in it
Lead Sn Zn Mn Cl, Borax
Hg - Sb.
also Salts -

Submarine Devices
now used or possible

1 – Hydroaeroplane – Bombs with range finder – Report
2 Buoy Station, reporting by wireless Oscillator
Heavy heave cannon, Torpedo, – Edge break waves all sizes
3 Cable supporting system
4 Fast boats, detector, 3" + special arrow propeller
5 Night changing detector, night glass, flare
6 Destroyers
7 Anchored fish nets pull gives signal
8 Nets + Trawlers
9 Smudge Oil also wireless
10 Swash or displacement swell give signal
11 Electric Aeroplane, bomb, paravane cover from ship
12 8 ft wood wheel spun high Vel, TNT dropped in water
13 Sum Edison Torpedo – wire floats on – Range finding buoy
14 Torpedo Controlled by oscillator or Hammond
15 Chain shot, destroy periscope,
16 Spinning wheel TNT in
17 Lassoo
18 Special observing periscope device
19 Echo device

1= Mason-oxy ~~line, blackwand~~ Expmts smudge

2 = Submarine Detector

3 Splash Range finder - Making -

4 Visual signalling system OK X

5 Coalfire ~~extinguisher~~ OK. X

6 = Sound Range finder, Expmtg

7 Submarine ~~search~~ light Ex

8 Aeroplane detector Expmtg

9 Telefone ~~system for ships~~ OK X

10 Improved night glass Homatropline + goggles OK X

11 = $SO_2$ Absorber made ~~for Splash men~~

12 = Cleanable ~~Range finder~~, making

13 = Telegraph ~~Body Detection~~

14 Cable system Sub M detectors - look out for stale reclamation

15 Turbine head ~~projectile~~ made, + test with Cannon

16 Aeroplane ~~projectile~~

17 Submarine projectile

18 Smudging ~~periscopes~~ OK X

19 - Black smoke projectiles Expmtg

20 Oil tank finders - Expmtg

21. Extension ~~Mast for~~ Ore admiralty Model being made

22 Illuminating distant sea areas.

23 Hydrogen Detectors, Expmtg

24 Submarine chg at night detectors Same as Aeroplane detectors

(15)

25 = Bomb range finder for Aeroplanes + dropping

26 = Tuned fork system trench communication

27 Cheap hand diaphm ~~pressure~~ [illegible]

28 Corrosion of ~~submarine~~ guns OK X

29 - Cancelling out local soil [illegible]
making apparatus

30 Absorbing Explosive products in ships

31 = Secret wireless - working

32 - Mark prices for [illegible]

33 Make 1000 watt [illegible] quicker for [illegible]

34

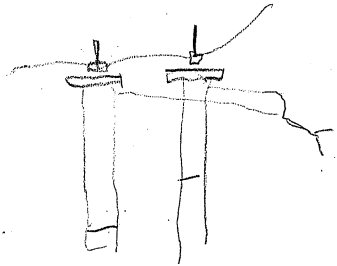
14 ) 300 ( 21.4
28
20
14
60

22 ft/sec

22 ) 5240 ( 238 ft/second
44
84
66
180

24 sec
21
120
48
60

60 ) 537 ( 8.9
480
57 minutes

24 ft/sec

24 ) 12900 ( 537
12
90
72
180